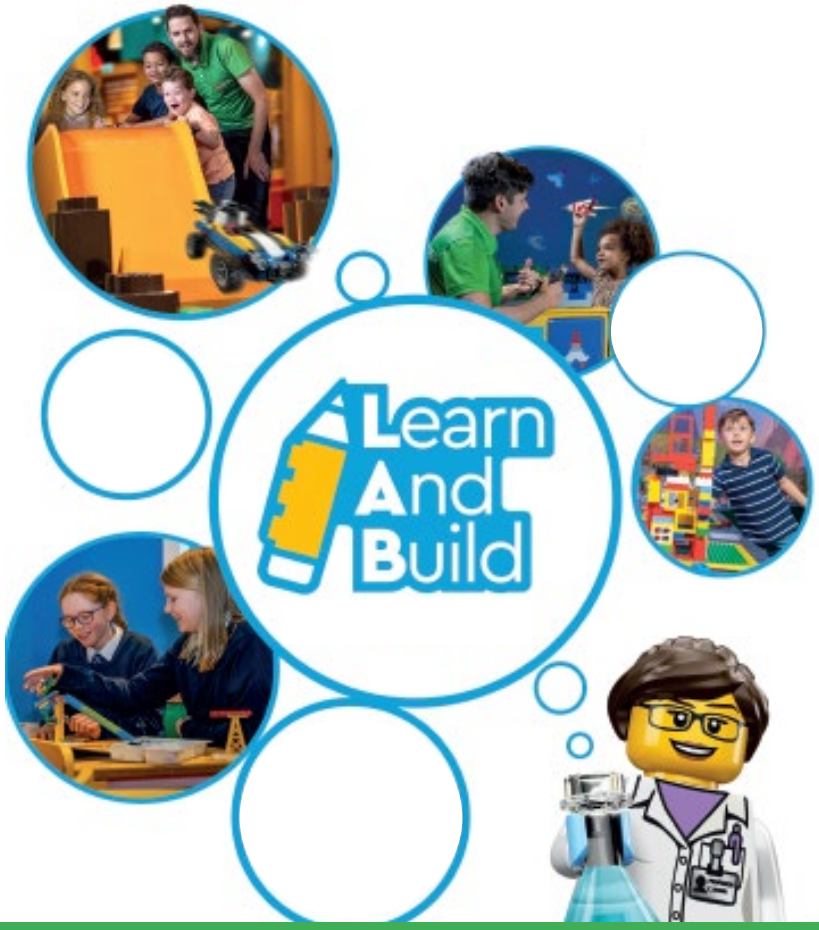
Homeschool Self-Guided Education Packet



TEACHER GUIDE

GRADES 2 – 3

STUDENT SHEETS INCLUDED

LEGOLAND® DISCOVERY CENTER

LEGOLAND DISCOVERY CENTER

VISIT GUIDE: GRADE 2-3

Welcome to LEGOLAND® Discovery Center

LEGOLAND® Discovery Center
connects learning and fun together like LEGO® bricks!

Our self-guided homeschool visits allow students to **explore, discover**, **and create** in an engaging environment filled with hands-on activities. The guide is designed to add fun, focused, and interactive learning during your visit.

This guide includes **curriculum-based challenges and activities** covering Mathematics, English, History, and Science for 3 attractions! Including:

MINILAND
Marvel at LEGO landmarks while learning about geography.

LEGO® Kingdom Quest
Think like a scientist on a data investigation!

LEGO® Racers Build & Test
Design and test your way to the finish line!

The attractions can be visited in any order.

TEACHER GUIDE: GRADES 2-3

LEGO® MINILAND

MINILAND is a miniature replica featuring the city's most loved buildings and landmarks.
Fun Facts: All of the MINILAND models took a total of 5000 hours to design and build.
MINILAND is made up of over 1.5 Million LEGO® Bricks. There are over 500 Minifigures!

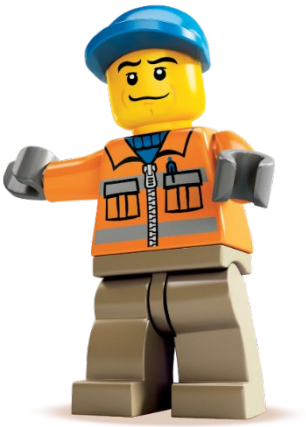
Challenge

Students are challenged to explore MINILAND and identify historic or notable city landmarks, and look for activities located in specific locations, such as sports and transportation. They are asked to find these key items and locations:

- **Find a sports arena** – Answer: Arizona Cardinals Game at State Farm Stadium
- **Find an airport** - Answer: Phoenix Sky Harbor Airport
- **Find a water feature** - Answer: Colorado River in the Grand Canyon
- **Find a lake** – Answer: Tempe Town Lake
- **Find a sculpture** – Answer: Robert Indiana's Love Sculpture
- **Find a fun attraction with a ride** – Answer: Grand Canyon Observation Deck
- **Find an iconic Phoenix building** – Answer: Chase Tower

Post Challenge

Students are asked to put each landmark in the correct group (i.e. Natural or Human-made) and tell you why it's important. Then they are tasked to select 5 landmarks to include in their dream version of MINILAND and draw them, before finally thinking and reflecting on how landmarks represent culture, history or community needs.



TEACHER GUIDE: GRADES 2-3

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Arizona Curriculum Standards Addressed

Activity Component	What Students Do	Arizona Standards (Grades 2–3)	Alignment Details
Exploration & Observation	Students explore MINI LAND, identify landmarks (sports arena, airport, river, sculpture) and ask reflective questions.	**SEP: Obtain, evaluate, and communicate information**	Students act like scientists—observing real-world models, asking questions, and gathering information.
Classification (Natural vs Human-made)	Students categorize landmarks as natural or human-made and explain their significance.	**Crosscutting Concept: Structure and Function; Systems and System Models**	Students recognize patterns and categorize elements of the environment, understanding their functions and how systems are constructed.
Modeling & Design (Dream MINILAND)	Students select five landmarks, draw them to create their dream version of MINI LAND.	**SEP: Construct explanations and design solutions; develop & use models**	Drawing and modeling help students communicate ideas and construct representations of their understanding and personal design preferences.
Reflection & Reasoning	Students reflect on how landmarks represent culture, history, or community needs.	**SEP: Engage in argument from evidence; Use mathematics and computational thinking (for reasoning)**	Students use evidence (their observations and reasoning) to justify how landmarks reflect community needs, enhancing socio-scientific literacy.

STUDENT WORKSHEET

LEGO® MINILAND

Student Name: _____

Designing MINILAND: Natural vs. Human-Made Landmarks

Part 1 – Landmark Scavenger Hunt

What can you see in MINILAND? (Check the boxes)

Famous Place or Landmark	For Extra Points: Name the famous place or landmark
☐ A sports arena	
☐ An airport	
☐ A water feature	
☐ A river	
☐ A sculpture	
☐ A fun attraction or ride	
☐ A famous building	

Part 2 – Landmark Sorting

Landmark	What Type? (Circle One)	Why Is It Important?
	Natural Human-made	
	Natural Human-made	
	Natural Human-made	
	Natural Human-made	
	Natural Human-made	
	Natural Human-made	
	Natural Human-made	

Student Name: _____

Design Your Own Dream MINILAND

Part 3 – Design & Modeling

If you had to build a MINILAND of your own out of LEGO® bricks, what are the top 5 landmarks you would include?

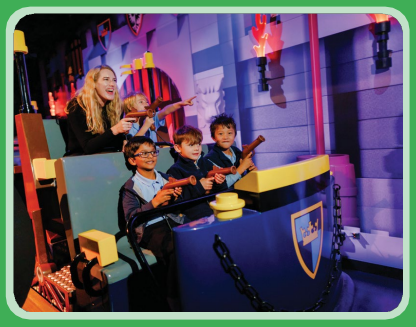
Part 4 – Reflection

- What makes a landmark special to people?
- How does your dream MINILAND show different people and cultures?
- Why do cities build landmarks?

TEACHER GUIDE: GRADES 2-3

LEGO® Kingdom Quest

Kingdom Quest is a ride in which riders board carriages and are transported through a series of interactive screens. Each person in the carriage is provided with a "blunderbuss" and compete to save the princess and get the highest score!



Challenge

Students are instructed via voiceovers to zap the bad guys with the blunderbuss – this is done by pointing and shooting. A score appears on a screen in front of each students which tallies their success in zapping the bad guys. To gather the appropriate amount of data, enjoy the ride up to 4 times! Adults are encouraged to ride also; this way students have more data to utilize.

- Ride 1: Choose any seat and sit on the right side.
- Ride 2: Choose the same seat but sit on the left side.
- Ride 3: Choose a seat in a different row, sit on the right side.
- Rode 4: Choose the same row but sit on the left side.

At the conclusion of each ride, students must remember their score. Students can also ask other riders what their scores were. After exiting the ride each time, students must write down their score and those of others.

Post Challenge

Students are encouraged to think about the different ways they can represent this data and are to explore how the same data can be represented in different ways. They are challenged to represent the data in a grid form. They can also reflect on whether Kingdom Quest was fair.

Aligned Learning Objectives

- **Scientific Inquiry & Data Collection** – Recording repeated measures and pooling peer data.
- **Data Representation** – Displaying results in grids, charts, or tables.
- **Pattern Recognition** – Comparing scores across different conditions (seat, row).
- **Evidence-Based Reasoning** – Using data to make claims about fairness and variability.
- **Collaboration & Communication** – Sharing and comparing results strengthens scientific practice.

TEACHER GUIDE: GRADES 2-3

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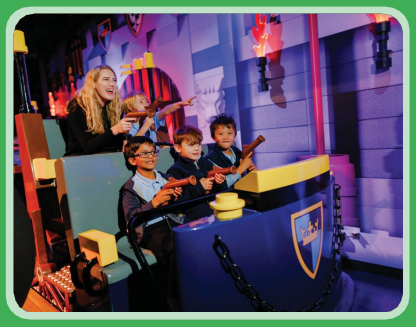


Arizona Curriculum Standards Addressed

Activity Component	What Students Do	Arizona Standard(s)	Alignment Details
Planning & Prediction	Students predict outcomes before the ride, plan which seats/rows to test, and decide variables to change.	**3-5-ETS1-3**: Plan and carry out fair tests in which variables are controlled.	Students intentionally control variables (seat, row, side) and plan multiple trials to ensure fairness.
Investigation & Observation	Students ride in different positions, record their scores, and compare results.	**2-PS1-1**: Plan and conduct an investigation to describe and classify materials by their observable properties. **3-PS2-2**: Make observations/measurements of motion to find predictive patterns.	Students gather first-hand data, classify results (better/worse scoring seats), and look for motion/score-related patterns.
Data Collection & Organization	Students write down their scores and classmates' scores; organize results in tables, grids, or graphs.	**2-PS1-2**: Analyze data from tests of objects to determine which materials are best suited for an intended purpose.	Students analyze ride data, identify which positions produced higher/lower scores, and compare results to predictions.
Data Analysis & Math Integration	Students calculate averages, compare rows/seats, and identify highest/lowest scoring positions.	**3-PS2-2** (patterns of motion) **Mathematics Integration (Data representation, averages)**	Students recognize patterns in score data and apply mathematical thinking to quantify outcomes.
Evidence & Argument	Students explain whether Kingdom Quest is "fair" based on evidence collected.	**2-PS1-4**: Construct an argument with evidence that some changes to materials can be reversible. **Science & Engineering Practice: Engage in argument from evidence**	Students use evidence to argue whether seat/row changes affect fairness, connecting claims to collected data.
Reflection & Communication	Students reflect on predictions vs. outcomes and write conclusions about variables, fairness, and learning.	**SEP: Construct explanations and communicate findings**	Students explain their results in written and visual forms, reinforcing communication and reasoning skills.

Student Name: _____

Data Investigation: Is the Game/Ride Fair?

Part 1 – Planning Our Investigation

Our Question: Is the game/ride fair for all players, no matter where they sit or how many times they play?

Prediction:

I think the _____ (seat/side/row) will get the highest score

because _____

Plan Your Test:

- What will you change? (seat, side, row):

_____

- What will you keep the same?:

_____

- What will you measure?:

_____

Part 2 – Collecting Our Data

Player Name	Seat/Row	Try #	Score	Notes (anything unusual?)

Student Name: _____

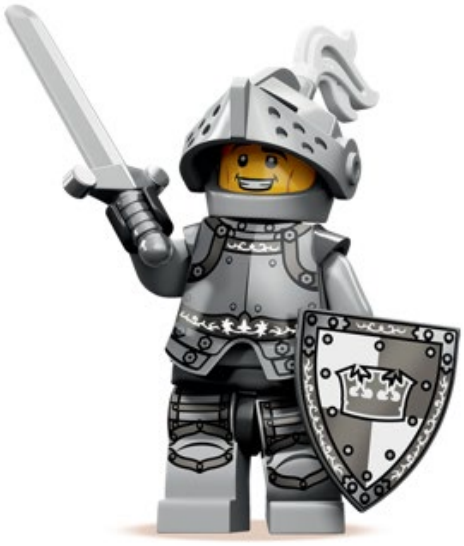
Data Investigation: Is the Game/Ride Fair?

Part 3 – Data Representation & Analysis

Step1 - Organize Your Data: Make a graph (bar, line, or dot plot) to show scores for different seats/rows. Color code if you want to show first rides vs repeat rides. Label your axes **"Ride #"** and **"Scores."**

Step 2 - Math Challenge:

- Which ride had the highest average?
- Which seat/side/row gave the lowest score?
- Did changing sides or rows make a difference?



Data Investigation: Is the Game/Ride Fair?

Part 4 – Evidence & Explanation

1. Was the game/ride fair? Why or why not? Use your data to explain your answer

_____

_____

2. If you could redesign the game to make it fairer, what would you change?

_____

_____

3. How would you test your idea?

_____

_____

Part 5 – Reflection & NGSS Connections

- Analyzing Data: What patterns did you notice in your data?
- Did your prediction match your results? Why or why not?
- What did you learn about how changing variables (seat, side, row) can affect outcomes?

Final Statement: I think the game/ride IS or IS NOT fair because…

_____

_____

TEACHER GUIDE: GRADES 2-3

LEGO® Build & Test

In the Build and Test area, students will find brick pits featuring car pieces including wheels, body pieces, and axels. They can then use two different ramps to test the durability and speed of their cars.

Challenge

Students must build cars and race them against other students' builds. Students need to observe which cars win the race and critically consider what design features are more prominent in the winning cars. They are then asked to tick which features listed on their worksheet help the cars go faster.

Post Challenge

Students are challenged to review the data from build and test and determine the design features needed for a fast car. They are asked to list the top 5 features. They are then tasked with creating a visual design of the car featuring the five most important design elements.

Aligned Learning Objectives

- **Forces & Motion** – Students explore how pushes, pulls, and design features affect speed and direction.
- **Scientific Inquiry** – Collecting, recording, and analyzing race data strengthens observation and reasoning.
- **Engineering Design** – Students generate, test, and refine designs based on performance evidence.
- **Patterns & Predictions** – Students identify motion patterns and use them to predict future outcomes.
- **Communication** – Students visually represent design solutions through drawings or models.

TEACHER GUIDE: GRADES 2-3

LEGO® Build & Test

In the Build and Test area, students will find brick pits featuring car pieces including wheels, body pieces, and axels. They can then use two different ramps to test the durability and speed of their cars.

Arizona Curriculum Standards Addressed

Activity Component	What Students Do	Arizona Standard(s)	Alignment Details
Investigating Materials	Students explore and compare LEGO pieces (wheels, axles, bricks) to determine which features improve performance.	**2-PS1-1**: Plan and conduct an investigation to describe and classify materials by their observable properties.	Students identify parts by properties (size, shape, weight) and classify which are most useful for speed and motion.
Testing & Data Collection	Students race cars and record which designs perform best.	**3-5-ETS1-3**: Plan and carry out fair tests in which variables are controlled.	Students conduct repeated trials, control for variables (e.g., slope, push strength), and gather evidence about speed.
Analyzing Performance	Students compare winning cars' features (wheel size, body shape, weight) and determine common design elements.	**2-PS1-2**: Analyze data from tests of objects to determine which materials are best suited for an intended purpose. **3-PS2-2**: Make observations/measurements of motion to provide evidence that a pattern can be used to predict future motion.	Students analyze race outcomes, connect features to performance, and identify speed-related patterns.
Evidence & Argument	Students explain which features make a car faster, using evidence from race results.	**2-PS1-4**: Construct an argument with evidence that some changes to materials can be reversible. **Science & Engineering Practices: Engage in argument from evidence**	Students argue why specific design choices (e.g., wheel type) improve speed, citing their recorded results.
Design Iteration & Communication	Students redesign or sketch a car including their top 5 speed-enhancing features.	**3-5-ETS1-1 / ETS1-2**: Define a problem with criteria and constraints; develop models that represent solutions.	Students apply engineering design by modeling an improved car and communicating design solutions visually.

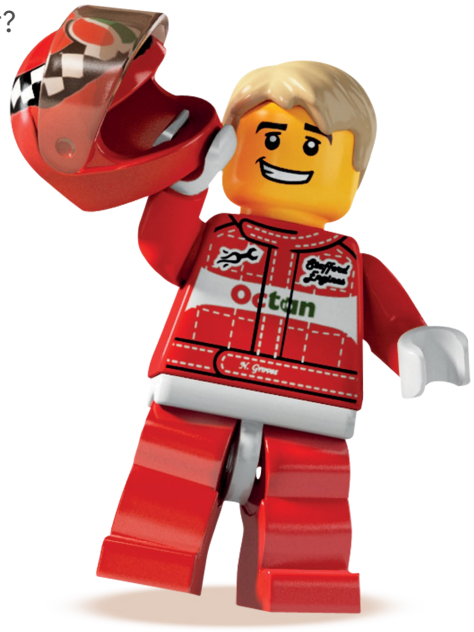
Car Building & Racing Investigation

You will build and race cars to find out which design features make a car go faster. After each race, record your results and look for patterns. Use your data to design a new car with the best features!

Part 1 – Prediction

Question: Which features do you think will make the fastest car?

- ☐ Big wheels
- ☐ Small wheels
- ☐ Long body
- ☐ Short body
- ☐ Low body
- ☐ Tall body
- ☐ Wide body
- ☐ Thin body
- ☐ Dark colored bricks
- ☐ Light colored bricks
- ☐ Windshield
- ☐ No windshield
- ☐ Heavy car
- ☐ Light car



Part 2 – Challenge

Build LEGO® cars and then race them on the ramp. Try and make sure everyone is building different types of cars so you can test which cars are the fastest.

READY, SET GO!

Part 3 – Race Results

Record results below. Tick the features each car had and write the race outcome.

Car #	Wheels (Big/Small)	Weight (Light/Heavy)	Body (Wide/Narrow)	Other Features	Race Result (Win/Lose)
Car 1					
Car 2					
Car 3					
Car 4					

Car Building & Racing Investigation

Part 4 – Finding Patterns

Question: Which patterns do you see? Which features helped cars go faster?

Part 5 – Top 5 Features

List the 5 most important features for making a fast car.

1. _____ 3. _____

2. _____ 4. _____

5. _____

Part 6 – Design Your Car

Draw and label your car design below, showing the 5 features you chose.